

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Dan W.C. Delmer

Serial No.: 09/904,975

Art Unit: 3679

Filed: July 12, 2001

Examiner: Aaron M. Dunwoody

For: COUPLING FOR PIPE AND RELATED METHODS

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Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**PROPOSED/POTENTIAL AMENDMENT IN RESPONSE TO 2007-09-18 FINAL  
OFFICE ACTION, FOR CONSIDERATION IN CONNECTION WITH UPCOMING  
EXAMINER INTERVIEW**

Sir:

This communication is in response to the Office Action dated September 18, 2007 and Applicant's attorney's subsequent telephonic communications with the Examiner to schedule an interview with the Examiner. Although that Office Action was designated as "final", Applicant believes that the circumstances and equities of this particular application support a further consideration by the Examiner of the materials herein, as well as the opportunity for further dialogue in the upcoming video conference scheduled for 2:00 p.m. Eastern Time, Thursday, November 15, 2007. Applicant looks forward to that opportunity to further try to explain Applicant's invention and the failure of the prior art to teach or make obvious Applicant's

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/J. Mark Holland/  
J. Mark Holland

November 14, 2007  
DATE

claimed inventions. Following that interview, Applicant respectfully submits that the currently pending claims, with or without the amendments below, should be allowed.

Based on the September 18, 2007 Office Action, Applicant would consider amending Claim 2 in any or all of the three following manners (see Options 1, 2, and 3 below). Applicant also believes it may be helpful and appropriate for the Examiner to consider allowing similar claims proposed below as “new” claims. Among other things, certain of them expressly require a “butt joint”, which would appear to even more clearly distinguish over the art with which the Examiner appears to be concerned.

OPTION 1 (to amend Claim 2):

Claim 2. (PROPOSED/POTENTIAL Amendment): Apparatus for joining a plurality of pieces of pipe, including:

a first piece of pipe and a second piece of pipe each having a similar size and shape sidewall corrugation pattern along their lengths, said corrugation including a generally repeating sinusoidal pattern in cross section having alternating portions (a) radially more distant from a longitudinal centerline of the pipe and (b) radially less distant from that centerline, with radially extending leg portions joining adjacent ones of said radially more distant portions and said radially less distant portions, the radially more distant portions and legs adjacent thereto forming rungs of the pipe, and the radially less distant portions forming valleys between pairs of adjacent rungs;

a first female engagement structure formed from the sidewall corrugation pattern of the first piece of pipe, said male engagement structure terminating longitudinally at a location along

the corrugation pattern that is generally within the radially less distant portion of the corrugation pattern; and

a first female engagement structure formed from the sidewall corrugation pattern of the second piece of pipe, said female engagement structure terminating longitudinally with a generally open end formed from a partial rung for receiving the male engagement structure,

the first female structure being temporarily deformable ~~and~~ for receiving the male structure, the temporary deformation being both sufficiently large to permit the insertion of the male structure but also sufficiently small to ensure that material memory returns the first female structure toward its original non-deformed configuration with sufficient compressive force to grip the male structure and help prevent its inadvertent removal from engagement with the first female structure, ~~and~~

~~wherein the female structure includes an inwardly projecting engagement element at its leading edge acting between said first and said second pieces of pipe to increase the force necessary to disengage said pipe pieces from each other following assembly.~~

OPTION 2 (to amend Claim 2):

2. (PROPOSED/POTENTIAL Amendment): Apparatus for joining a plurality of pieces of pipe, including:

a first piece of pipe and a second piece of pipe each having a similar size and shape sidewall corrugation pattern along their lengths, and each including a generally longitudinal axis parallel to the flowpath through the respective pipe pieces;

the sidewall corrugation of each of said pipe pieces comprising a generally sinusoidal exterior surface such that, in section view along the length of the longitudinal axis, said exterior

surface forms a generally sinusoidal pattern of alternating similarly-shaped and similarly-sized (a) rung elements and (b) valley portions; said valley portions generally spacing said rung elements from one another longitudinally with respect to the pipe piece's longitudinal axis; said rung elements generally formed in cross section by a central portion lying generally parallel to the valley portion and spaced radially outwardly therefrom, said central portion having in cross section first and second opposing edges spaced longitudinally from each other along the longitudinal axis, said rung elements further generally formed in cross section by first and second leg portions, each leg portion respectively connecting the corresponding edge of the rung central portion to an adjacent valley;

~~a first female engagement structure formed from the sidewall corrugation pattern of the first piece of pipe; and~~

a male engagement structure at one end of the second piece of pipe, said male structure formed from the sidewall corrugation pattern of the second piece of pipe,

~~the~~ a first female structure formed from the sidewall corrugation pattern of the first piece of pipe at one end of the pipe, said female flange comprising a portion of a rung including the rung's central portion, said female flange configured to receive the male engagement structure of the second pipe piece by being temporarily deformed for receiving the male structure, the temporary deformation being both sufficiently large to permit the insertion of the male structure but also sufficiently small to ensure that material memory returns the first female structure toward its original non-deformed configuration with sufficient compressive force to grip the male structure and prevent its inadvertent removal from engagement with the first female structure;  
and

~~wherein the female structure includes an inwardly projecting engagement element at its leading edge acting between said first and said second pieces of pipe to increase the force necessary to disengage said pipe pieces from each other following assembly.~~

Claim 3. (Previously amended): The apparatus of Claim 2, in which said pipe sidewall corrugation pattern of each piece of pipe includes a corrugated exterior surface and an internal non-corrugated liner element.

Proposed "New" dependent claims (allowable after allowance of one or both of Options 1 and 2 above)

NEW CLAIM 3A (depending from 3): The apparatus of Claim 3, in which the first female engagement structure constitutes a continuation of the generally sinusoidal pattern of the sidewall corrugation generally without the portion of the pattern transitioning between the radially more distant portion of the corrugation pattern and the radially less distant portion of the corrugation pattern and without the portion of the internal non-corrugated liner element that would otherwise underlie the radially more distant portion of the corrugation pattern.

NEW CLAIM 3B: The apparatus of Claim 3, in which the confronting ends of the respective internal non-corrugated liner elements of the respective pieces of pipe generally form a butt joint with each other, said butt joint providing a substantially smooth interior transition surface longitudinally between the respective pipe elements.

NEW CLAIM 3C: The apparatus of Claim 3, further including a sealing gasket located between the confronting ends of the respective internal non-corrugated liner elements of the respective pieces of pipe.

43. (New) A pipe section, said pipe section including a generally longitudinal axis parallel to the flowpath through the pipe section; said pipe section further including a generally sinusoidal exterior surface such that, in section view along the length of the longitudinal axis, said exterior surface forms a generally sinusoidal pattern of alternating similarly-shaped and similarly-sized (a) rung elements and (b) valley portions; said valley portions generally spacing said rung elements from one another longitudinally with respect to the pipe section's longitudinal axis; said rung elements generally formed in cross section by a central portion lying generally parallel to the valley portion and spaced radially outwardly therefrom, said central portion having in cross section first and second opposing edges spaced longitudinally from each other along the longitudinal axis, said rung elements further generally formed in cross section by first and second leg portions, each leg portion respectively connecting the corresponding edge of the rung central portion to an adjacent valley;

a female flange portion at one end of the pipe section, said female flange comprising a portion of a rung including the rung's central portion, said female flange configured to receive a similarly sized and shaped rung element on the end of a similar second pipe section.

44. (New) The pipe section of Claim 43, in which said female flange is formed as an end of the pipe section generally sinusoidal pattern that is terminated generally at or near an longitudinally outermost edge of the central portion of a rung.

45. (New) The pipe section of Claim 43, in which said pipe section includes at the end opposite the female end a male end, said male end formed as an end of the pipe section generally sinusoidal pattern that is terminated generally adjacent a rung near the transition of the leg of the rung into the adjacent valley.
46. (New) The pipe section of Claim 43, in which said pipe section includes at the end opposite the female end a second female end similar to the first female end already described.
47. (New) The pipe section of Claim 43, in which said pipe section female end is formed from a material that (a) permits sufficient expansion of that female end to receive a corresponding male end and (b) has sufficient material memory to snugly engage a male end after it has been so inserted.
48. (New) The pipe section of Claim 43, in which said pipe section includes a central liner element forming a generally straight internal diameter of said pipe section.
49. (New) A pipe section, said pipe section including a generally longitudinal axis parallel to the flowpath through the pipe section; said pipe section further including a generally sinusoidal exterior surface such that, in section view along the length of the longitudinal axis, said exterior surface forms a generally sinusoidal pattern of alternating similarly-shaped and similarly-sized (a) rung elements and (b) valley portions; said valley portions generally spacing said rung elements from one another longitudinally with respect to the pipe section's longitudinal axis; said rung elements generally formed in cross section by a central portion lying generally parallel to the valley portion and spaced radially outwardly therefrom, said central portion having in cross section first and second opposing edges

spaced longitudinally from each other along the longitudinal axis, said rung elements further generally formed in cross section by first and second leg portions, each leg portion respectively connecting the corresponding edge of the rung central portion to an adjacent valley; said pipe section terminated generally at each of its two ends with a male end formed generally by a rung element.

OPTION 3 (to amend Claim 2 (similar to Option 1, but for the limitation ending in “, said termination occurring at a location along the corrugation pattern that is generally within the radially more distant portion of the corrugation pattern”):

Claim 2. (PROPOSED/POTENTIAL Amendment): Apparatus for joining a plurality of pieces of pipe, including:

a first piece of pipe and a second piece of pipe each having a similar size and shape sidewall corrugation pattern along their lengths, said corrugation including a generally repeating sinusoidal pattern in cross section having alternating portions (a) radially more distant from a longitudinal centerline of the pipe and (b) radially less distant from that centerline, with radially extending leg portions joining adjacent ones of said radially more distant portions and said radially less distant portions, the radially more distant portions and legs adjacent thereto forming rungs of the pipe, and the radially less distant portions forming valleys between pairs of adjacent rungs;

a male engagement structure formed from the sidewall corrugation pattern of the first piece of pipe, said male engagement structure terminating longitudinally at a location along the



corrugation pattern that is generally within the radially less distant portion of the corrugation pattern; and

a first female engagement structure formed from the sidewall corrugation pattern of the second piece of pipe, said female engagement structure terminating longitudinally with a generally open end for receiving the male engagement structure, said termination occurring at a location along the corrugation pattern that is generally within the radially more distant portion of the corrugation pattern.

the first female structure being temporarily deformable to receiving the male structure, the temporary deformation being both sufficiently large to permit the insertion of the male structure but also sufficiently small to ensure that material memory returns the first female structure toward its original non-deformed configuration with sufficient compressive force to grip the male structure and help prevent its inadvertent removal from engagement with the first female structure.

#### REMARKS

As indicated above, it is thought that the foregoing and the upcoming video conference will address any remaining issues concerning patentability. If the Examiner has any questions regarding the foregoing, or if the Examiner would like to discuss any remaining or new issues regarding this communication, the Examiner is invited to contact the Applicant's representative at (949) 718-6750.

Respectfully submitted,

Date: November 14, 2007

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